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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,312	06/28/2007	Yoichi Mori	295693US0PCT	7005

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EXAMINER	
NGUYEN, NGOC YEN M	

ART UNIT	PAPER NUMBER
1793	

NOTIFICATION DATE	DELIVERY MODE
06/21/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/593,312	MORI ET AL.	
	Examiner	Art Unit	
	Ngoc-Yen M. Nguyen	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 April 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) *6-10 and 15-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 11-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's election of Group I in the reply filed on April 29, 2010 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 6-10, 15-18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on April 29, 2010.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 2 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In the instant specification, it is disclosed that "a waste gas discharged from a semiconductor manufacturing process may contain CO, and furthermore CO may be

produced as a byproduct during PFC decomposition; it is thus necessary to decompose and remove this CO. ... In this case, oxygen may be added to the gas to be treated, whereby the CO can be decomposed" (note page 6, lines 20-28). However, there is no sufficient support in the instant specification for the step of adding oxygen to a gas that contains only oxidizing gases, acidic gases as now required in the instant claim 2 (note "at least one" language).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5, 11-14 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 5 and 14, for the limitation "at a temperature 50 to 150°C higher than initially in a range of 650 to 800°C", it is unclear if the "650 to 800°C" is the initial temperature range or the final temperature range.

In claim 11, it is unclear if "recovering fluorine" limitation requires that elemental fluorine be recovered, or just fluorine value (i.e. fluorine value is recovered in the form of calcium fluoride)? In this office action, it is assumed that fluorine value is recovered.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohira et al (6,309,618).

Ohira '618 discloses a process for treating exhaust gas containing a fluorine containing interhalogen compound, comprising first contacting the fluorine-containing interhalogen compound with a treating agent for selectively treating a fluorine component to provide a resultant treated exhaust gas and then contacting the resultant treated exhaust gas with a treating agent for treating a halogen component (note claim 1).

The treating agent for the fluorine component of a fluorine-containing interhalogen compound can comprise an alkaline earth metal carbonate and a metal hydroxide (note column 5, lines 57-60). The metal hydroxide used in the treating agent for the fluorine component is not particularly limited as long as it generates water at the reaction with the fluorine component. Preferred examples thereof include alkali metal hydroxides, alkaline earth metal hydroxides such as calcium hydroxide, and metal hydroxides, such as aluminum hydroxide. These hydroxides can be used individually or two or more thereof may be used by mixing them at an optional ratio (note column 7, lines 34-45). Thus, Ohira '618 fairly teaches, with sufficient specificity, the use of a mixture of calcium hydroxide and aluminum hydroxide as part of the treating agent for the fluorine component of a fluorine-containing interhalogen compound.

When metal hydroxide such as calcium hydroxide is used, a metal fluoride, such calcium fluoride is produced (note column 5, lines 40-45), and the calcium fluoride as disclosed in Ohira '618 is considered as the "fluorine" being recovered.

The process of Ohira '618 anticipates the claimed process.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-224,565 in view of WO 02/058824.

JP '565 discloses and agent and a process for decomposing a fluorocarbon, such as CF_4, contained in a waste gas discharged from a semiconductor production step at a degree of decomposition of at least 99.9% at a relatively low temperature, e.g. 1000°C or below without causing the agent to be deactivated within a short time and without forming a corrosive gas such as hydrogen fluoride. The agent comprises an effective component aluminum oxide and an alkaline earth metal oxide or an alkaline earth metal compound which yields an alkaline earth metal oxide when thermally decomposed (note English abstract). The alkaline earth metal compound can be calcium hydroxide (note for example, runs 11, 27, 43 in Tables 1, 2, 3, respectively).

For claim 2, in JP '565, oxygen can be added to the process (note reaction 3 on page 6).

For claims 5, 14, since these claims do not require any time for each contacting step, when the waste gas in the process of JP '565 is heated to the required temperature, e.g. "1000°C or less" (note abstract) or "860°C" (note runs 11, 27, 43), it would inherently be heated to the lower temperature of 500-700°C before reaching the final temperature, the contacting step as disclosed in JP '565 would read on both the low and high temperature contacting steps as required in the instant claims 5 and 14. The temperature range of "1000°C" in JP '565 (note abstract) is considered as overlapping the claimed range of "550 to 850°C". With respect to the encompassing and overlapping ranges previously discussed, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time of invention to select the portion of the prior art's range which is within the range of the applicants' claims because it has been held prima facie case of obviousness to select a value in a known range by optimization for the results. *In re Boesch*, 205 USPQ 215. Additionally, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549. Moreover, the value of "860°C" as used in the examples would have suggested to one of ordinary skill in the art a slightly lower value based upon a reasonable expectation of success, In re O'Farrell, 853 F.2d 894, 904, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988).

The difference is JP '565 discloses the use of alumina, not aluminum hydroxide as required in the instant claims.

WO 824 discloses a process for the decomposition and removal of one or more fluorine containing compounds from a first gaseous mixture, which process comprises the stages of:

(i) contacting the first gaseous mixture with a catalyst comprising an aluminum based material to produce a second gaseous mixture comprising hydrogen fluoride and carbon oxides; and

(ii) contacting the second mixture with an absorbent comprising an aluminum based material to remove hydrogen fluoride from the second gaseous mixture and to produce a third gaseous mixture, which is substantially free of hydrogen fluoride (note claim 1).

Suitable catalysts comprising an aluminum based material for use in the first stage of the process include aluminum oxide (alumina), hydrated aluminum oxide, aluminum hydroxide, etc. (note page 6, lines 24-27).

Thus, WO '824 fairly teaches that aluminum oxide and aluminum hydroxide are analogous catalysts to decompose a fluorine containing compound.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use aluminum hydroxide, instead of alumina, in the process of JP '565, as suggested by WO '824 because aluminum hydroxide and alumina are analogous catalysts for decompose the halogen containing compound.

For the combined teaching of JP '565 and WO '824, it would have been obvious to optimize the particle size of the aluminum hydroxide and the calcium hydroxide to obtain the best results. Without a showing of criticality or unexpected to use of an agglomerate in which calcium hydroxide fine particles are attached to the surface of aluminum hydroxide is not seen as a patentable difference because regardless of whether the aluminum hydroxide and the calcium hydroxide are in the form of an agglomerate, they would function in the same manner in the process of treating a fluorine-containing gas.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner can normally be reached on Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ngoc-Yen M. Nguyen/
Primary Examiner, Art Unit 1793

nmn
June 17, 2010